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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/624,260

07/22/2003

Foot Shen Wong

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EXAMINER

PARRIES, DRU M

ART UNIT

PAPER NUMBER

2836

MAIL DATE

DELIVERY MODE

07/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/624,260	Applicant(s) WONG ET AL.	
	Examiner Dru M. Parries	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Response to Arguments***

1. Applicant's arguments filed May 1, 2007 have been fully considered but they are not persuasive. Regarding the amendment to claims 1, 4, 7, and 11, and new claim 17, Carobolante teaches that the condition under which a PWM current or a linear current is used to power the load is a matter of design choice for one skilled in the art. (Col. 14, lines 26-29) Therefore, it is taught that any desired type of output condition (i.e. a specified ripple current), which is known to one of ordinary skill in the art, can be implemented and controlled by the linear current source and PWM signal of Carobolante's invention. Also, the current associated with the PWM signal is zero during the time, just before switchover, while the linear current is being supplied.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carobolante (6,084,378) and Alfrey (2003/0103364). Carobolante teaches a current source (V_M) and four power switches forming an H-bridge circuit selectively coupled to supply current to a load. He also teaches a plurality of power switch driving circuits (not shown) to control the conduction state of the power switches to selectively couple at least two power switches to a PWM signal. Carobolante teaches two modes of operation: a linear mode for periods of low current consumption and a PWM mode for periods of higher current consumption. Also, the

current associated with the PWM signal is zero during the time, just before switchover, while the linear current is being supplied. He also teaches the idea of adding additional circuitry to drive the load with linear current from the current source. Carobolante also teaches that the condition under which a PWM current or a linear current is used to power the load is a matter of design choice for one skilled in the art. Therefore, it is taught that any desired type of output condition (i.e. a specified ripple current), which is known to one of ordinary skill in the art, can be controlled and implemented by the linear current source and PWM signal of Carobolante's invention. (Col. 1, lines 30-31; Col. 2, lines 17-23, 29-31; Col. 3, lines 40-46; Col. 14, lines 18-20, 22-29; Fig. 1). Carobolante fails to explicitly teach the desired output producing a specified ripple current, a system having two current sources, the load being a thermal electrical cooler, and what the direction of current through the load defines. Alfrey teaches a linear H-Bridge circuit with for supplying current to a load, such as a thermoelectric cooler. He also teaches the direction of current through the load to define a cooling or heating mode. He also teaches the circuit comprising two current sources (Fig. 7, 7A; 17 & 19) with current source switches (601), wherein one source is coupled to the load during a first period and the other is coupled during a second period via current source switches ([0005] & [0044]). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a thermoelectric cooler as the load and define the direction of current as either a cooling or heating mode because some applications of an H-Bridge circuit are used specifically for thermoelectric coolers and the heating and cooling modes are necessary for the cooler to function properly (inherent). It also would have been obvious to one of ordinary skill in the art at the time of the invention to implement two current sources in the circuit to control the magnitude of the current being

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supplied to the load. The Examiner takes Official Notice that power supply systems have been known to be controlled to produce a specified ripple current (i.e. zero amps) at a load.

Therefore, it also would have been obvious to one of ordinary skill in the art at the time of the invention to control the system of Carobolante to produce a specified ripple current (zero amps) at the load, since the Examiner takes Official Notice that Carobolante teaches that the method of supplying power to his system is merely design choice.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carobolante (6,084,378) and Alfrey (2003/0103364) as applied to claim 7 above, and further in view of Walter (2003/0155813). Carobolante and Alfrey teach an H-Bridge circuit as described above. The two references fail to teach a filter circuit coupled between some switches and the load. Walter teaches a filter circuit (34, 36) coupled between two of four switches and the load (Fig. 1; [0034]). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a filter circuit for attenuating harmonic distortion in the output voltage.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dru M. Parries whose telephone number is (571) 272-8542. The examiner can normally be reached on Monday -Thursday from 9:00am to 6:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on 571-272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMP

7-17-2007



MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER